AMERICAN SOCIETY FOR TESTING MATERIALS

BULLETIN

260 SOUTH BROAD STREET — PHILADELPHIA, PA.

"Promotion of Knowledge of Materials of Engineering and Standardization of Specifications and Methods of Testing"

NUMBER 68 — April 30, 1934

Thirty-seventh Annual Meeting to be Interesting One

Large Number of Technical Papers and Reports to be Given at Atlantic City, June 25 - 29

THE approaching Thirty-seventh Annual Meeting of the Society, to be held at Chalfonte-Haddon Hall, Atlantic City, June 25–29, promises to be a most interesting one—one that the members should not miss if at all possible. The first session of the meeting, as will be noted from the Provisional Program, which appears on pages 6 to 12, is scheduled for Tuesday afternoon. This leaves Monday and part of Tuesday available for committee meetings. There have been an increasing number of such meetings at recent annual meetings and with committee activities decidedly intensified, the time for meetings has been increased somewhat.

This year there will be no A.S.T.M. dinner; instead, Wednesday evening is to be devoted to a general session at which the presidential address will be delivered, followed by the award of the Dudley Medal. The annual dance and smoker will follow this short, but interesting session.

« A Request Blank »

is enclosed for members' use in securing preprints of Reports and Papers

HOTEL RESERVATIONS SHOULD BE MADE PROMPTLY

Technical Sessions

The best and most feasible way of gaining a good conception of what the technical program will be like is to review the Provisional Program in this April BULLETIN. This program is of distinct service, since it gives concise synopses of the papers and reports, the only place, except for the preprints, where these appear.

An unusually large number of papers were offered, and Committee E-6 on Papers and Publications has accepted as many outstanding ones as possible. There are papers included covering many important phases of the application and testing of widely used materials.

Many members will note with interest that an entire session is to be devoted (on Wednesday) to a discussion of phases of interpretation of data. Two papers will introduce the general discussion. This is the first time a regular session has been devoted to this subject, although two round-table discussions held during the past two meetings have been very well attended.

A group of three papers discussing aspects of tinting strength of pigments will be of wide interest. One paper will deal with the meaning or significance of this factor, while the other two will detail the determination of tinting strength—considering various factors bearing on the speed and accuracy of determination. The dispersion rate of colored pigments will be discussed in another paper.

The subject of vapor lock of gasoline has received considerable attention in the discussions of the committee on gasoline and a general discussion of this subject is being sponsored by the committee. Two papers introducing the discussion have been secured, which will indicate the relation between the vapor lock properties of gasoline and engine design.

Technical contributions in the metals fields will involve creep tests and properties, effect of sizes of test specimens, corrosion of steel under water, the design and protection from corrosion of pipe lines, and impact strength of die castings.

Cement and concrete, brick, and masonry materials are fields well represented by papers. Plastic flow of concrete, effect of duration of moist curing, suspension turbidimeter and an extensive paper based on studies of cement composition in relation to various properties of concrete are some of the subjects included; also, the cracking between mortars and brick, tests of reinforced brick masonry columns, indentation testing of asphalt tile, and manufacture of structural clay products by the de-airing process.

Annual meeting programs always include several papers dealing with testing and testing apparatus. This year's is no exception, and a number of papers are scheduled on such subjects as a high-speed fatigue testing machine, effect of notches and laws of similitude in testing, Huggenberger tensometer, subgrade soil testing methods, particle size methods, dielectric characteristics at commercial frequencies, testing insulating materials for power factor and dielectric constant, oil resistance of rubber and rubber-like materials and materials to be developed for structural engineering models.

Other papers on the program cover bituminous joint compounds for sewer pipe, combustibility of fire-retardant wood, dissolved oxygen by the Winkler method, etc.

Many of the committee reports will include data and information of exceptional value. The committee on light metals and alloys will present data which has been assembled on the physical, corrosion-resistant and other important properties of light metals and alloys. Results of the first inspection of the large number of test specimens on exposure in the tests involving galvanic and electrolytic corrosion will also be reported by the committee on corrosion of non-ferrous metals. Many other committees have had very active programs during the year and their reports will detail the major phases of their work.

Dudley Medal Award—Marburg Lecture

At the general session on Wednesday evening, at which the presidential address will be delivered by President Lawson, the Charles B. Dudley Medal for 1934 will be awarded. The winner this year is R. L. Templin, Chief Engineer of Tests, Aluminum Company of America.

This medal is awarded annually to the author of the paper presented at the preceding annual meeting which is of outstanding merit and constitutes an original contribution to research in engineering materials. Mr. Templin's paper, presented in 1933, was entitled "The Fatigue Properties of Light Metals and Alloys." Mr. Templin received his technical education at the University of Kansas, 1915, and University of Illinois, 1917, M.S. in Theoretical and Applied Mechanics. While at the University of Illinois, Mr. Templin was Research Fellow in the Engineering Experiment Station. Later he became engineering physicist at the U. S. Bureau of Standards. He has held his present position since 1919.

The Ninth Edgar Marburg Lecture will be delivered by Sheppard T. Powell (see page 3) on Wednesday afternoon. His subject is "Water as an Engineering and Industrial Material."

Written Discussion

It is important that all written discussion shall be in the hands of the Assistant Secretary prior to the session at which it is to be presented. Such written discussion takes precedence over oral. For both types the speakers will, in general, be limited to five minutes, but this time may be extended at the discretion of the Chair, or by vote of the meeting. Written discussions requiring more than five minutes for presentation must be accompanied by an abstract and at the discretion of the Chair shall be presented in abstract only.

CHALFONTE-HADDON HALL, BOARDWALK, AND BEACH

Preprint Distribution

A request blank for preprints on which the papers and reports are listed is enclosed to all members of the Society in good standing. The Provisional Program in this BULLETIN will enable members to make selection of the items desired. Each member should legibly mark the blank and return it promptly. Preprints will be forwarded as they become available, in two or three installments. Preprints will *not* be mailed to members unless requested.

Hotel Reservations and Advanced Registration

Hotel reservations should be made promptly. Members are requested to use the enclosed return blank, addressed to the hotel management in making reservations. Rooms may be secured on either the American or European plan. The hotel rates given in the March BULLETIN are repeated on this blank.

It is requested that members fill out and mail promptly the accompanying advance registration card.

Registration Procedure

Members and visitors should register immediately upon their arrival. Members will be charged a registration fee of $1, and will receive an identification badge and copies of preprints of such reports and papers as they request. Visitors will be charged a registration fee of $1 and will likewise be supplied with a badge, and will have the privilege of securing the preprints for any one particular session of the annual meeting. If a visitor desires a complete set of preprints he may procure them by the payment of $1 additional.

Reduced Railroad Rates

Round-trip tickets will be sold at one and one-third single fare to holders of identification certificates who plan to go and return by the same route, and two-thirds of the fare each way, going and returning by a different route. Both plans have a return limit of 30 days from date of sale. The date of sale ranges from June 19 to 27, depending on the distance from Atlantic City. The certificates will be mailed to the members late in May and may be used only by them and dependent members of their families. Only one certificate is needed, since this will take care of both the member and his family.

Companies, firms, etc., holding corporate Society membership which desire to send more than one individual to represent them at the annual meeting can secure a certificate for each additional representative. Requests for additional certificates giving the names of individuals for whose use they are intended should be sent to the Society. Certificates must be presented when tickets are purchased and must be validated at Atlantic City to be honored for the return trip.

Nominations for Officers

The following nominations for officers are announced:

For President:
W. H. BASSETT, Metallurgical Manager, The American Brass Co., Waterbury, Conn.

For Vice-President:
H. S. VASSAR, Laboratory Engineer, Public Service Electric and Gas Co., Irvington, N. J.

For Members of Executive Committee:
H. A. ANDERSON, Metallurgical Engineer, Western Electric Co., Chicago, Ill.
H. J. BALL, Professor of Textile Engineering, Lowell Textile Institute, Lowell, Mass.
W. M. BARR, Assistant to Executive Vice-President, Union Pacific Railroad, Omaha, Nebr.
L. S. MARSH, Manager, Department of Inspection and Metallurgy, Inland Steel Co., Chicago, Ill.
J. B. RATHER, In Charge, General Laboratories, Socony-Vacuum Corp., New York City.

The nominations were made by the Nominating Committee, the personnel of which was announced in the March BULLETIN. Each of the above nominees has indicated in writing his acceptance of his nomination. The By-laws provide that "further nominations, signed by at least 25 members may be submitted to the Secretary-Treasurer in writing by May 20, and a nomination so made, if accepted by the member nominated, shall be placed on the official ballot" which "shall be issued to the members between May 20 and June 1."

Report on Classification of Coals

The report of the Sectional Committee on Classification of Coals culminating six years of fact finding and research on origin, properties and uses of coal, and submitting two specifications for classification of coals by rank and by grade has been printed for distribution. The report is included on the Preprint Request Blank and will be mailed with the first installment of preprints late in May. Some members, however, may wish to have a copy of the report in advance of the general distribution of preprints, in which case they are requested to so advise the headquarters office.

President of I.A.T.M Dies

Dr. Walter Rosenhain, F.R.S., president of the International Association for Testing Materials since 1931 and the British delegate on its Permanent Committee from the time of its organization in 1927, died on March 17. His age was 59. He was an outstanding metallurgist of world-wide renown. Dr. Rosenhain was the first Superintendent of Metallurgical Chemistry, when the British National Physical Laboratory was founded. Later, other work received his attention, but since 1908 until his retirement a few years ago, he directed its extensive metallurgical researches.

Appointments and Representatives

QUINCY BENT, Vice-President, Bethlehem Steel Co., has been elected a member of the Board of Directors of the American Standards Association for a term of three years, on nomination of the Society.

J. B. YOUNG, Engineer of Tests, Reading Co., has been appointed a member of Committee E-10 on Standards to fill the unexpired term of the late J. H. Gibboney.

R. E. DAVIS, Professor of Civil Engineering, University of California, and F. N. SPELLER, Director, Department of Metallurgy and Research, National Tube Co., have been appointed to represent the Society at the California and Pittsburgh meetings, respectively, of the American Association for the Advancement of Science.

Sheppard T. Powell—Marburg Lecturer

Sheppard T. Powell, Consulting Sanitary and Chemical Engineer, Baltimore, who will deliver the Ninth Edgar Marburg Lecture at the 1934 meeting in Atlantic City has chosen as his subject "Water as an Engineering and Industrial Material." Mr. Powell, who is an outstanding authority on water and its problems, will review briefly the uses of water in engineering and industrial projects, stressing the variety of specifications required to meet the varying demands. He will outline specific requirements in different industries and discuss the advances in the art of water purification. The problem of testing forms a large portion of the lecture, especially analytical procedure. A brief survey of the current research in this country and abroad will focus attention on the potential value of petrographic, spectrographic and other applications of analytical procedure.

SHEPPARD T. POWELL

After completing his technical education at Rensselaer Polytechnic Institute, he became chief chemist for James M. Caird Laboratories, Troy, N. Y. Later he was chief chemical engineer for the Baltimore County Water and Electric Co. Since 1912, he has been retained in a consulting capacity by a large number of companies and municipalities in reference to the treatment of water for domestic and industrial uses and the treatment and recovery of trade wastes. Some idea of the diversified fields in which he is active can be had from a brief list of some of the companies for which he is now consultant, including: Julius Forstmann Woolen Co., Socony-Vacuum Corp., Stone & Webster Engineering Corp., Consolidated Gas, Electric Light and Power Company of Baltimore, Freeport Sulphur Co., Long Island Water Corp., and others. He is also Associate in Sanitary Engineering, Graduate School, Johns Hopkins University.

Mr. Powell is the author of a book on "Boiler Feed Water Purification" and wrote the chapter on "Purification of Water for Sanitary and Industrial Uses" embodied in the Silver Anniversary Volume of the American Institute of Chemical Engineers entitled "Twenty-five Years of Chemical Engineering Progress." As the author of a large number of technical papers presented before many societies, he has discussed such problems as operation and control of boiler feed water purification systems, embrittlement of boiler steel, the corrosion of casings of water wells by electrolysis, corrosion inhibition by lime treatment and its effect on industrial water consumption costs, etc.

He is chairman of the Joint Research Committee on Boiler Feed Water Studies and also of the Joint Committee on Stream Pollution. He is a member of the A.S.M.E. Boiler Code Committee, chairman of the Four States Section of the American Water Works Association and a past-chairman of the Maryland Section of the American Chemical Society.

American Society for Testing Materials

BULLETIN

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Number 68 **April 30, 1934**

Come to the Annual Meeting

FOR the past two years, conditions have been such that many of the members found it impossible to attend the Society annual meetings. Even a number of long-time members who rarely miss had to forego attendance, to their regret. With very definite turns for the better, increased attendance is anticipated.

Each member should make an unusual effort to get to Atlantic City during the week of June 25; if not for all of it, at least for a few days. Membership will mean that much more to those who can attend.

One of the justifications for a technical society is the opportunity it affords for those mutually interested in a field of endeavor to exchange ideas, to unite their efforts in promoting, broadly, the welfare of industry and mankind. Those so engaged cannot escape one other attendant result, the developing and broadening of personal associations and contacts. The A.S.T.M. annual meeting, concentrating on the standardization and research work (never so alive as now), provides splendid opportunities for new associations—a broadening of the individual—and a correlating and integrating of individual efforts toward progress. The committee meetings, annual meeting sessions, and A.S.T.M. atmosphere make all who come want to be there again.

A study of the Provisional Program in this BULLETIN will indicate what an interesting meeting is in prospect. Plans under way for a year—in some cases several years—are coming to fruition; committee activities have been intensified for the past few months to finish important work; authorities in diversified fields of activity are preparing papers to announce results of research work they have been conducting; all combine to auger well for the A.S.T.M. 1934 meeting.

Members who have not previously attended a meeting should make an extra effort to be present this year. The annual meeting is such an important part of the Society that no one who can possibly avoid it should miss it.

Membership Figures Encouraging—but More Help Needed

MEMBERSHIP statistics for the first quarter of 1934 show that there has been a net gain—in other words, the number of new members more than offset losses by resignations, deaths, etc. While the net gain is slight to be sure—six is the figure—nevertheless, it is definitely indicative of a better trend—for this is the first time in two years that the records have not shown a net loss.

Doubtless there is cause for satisfaction, but there is better cause for—increased efforts. A large number of members have been active—the Membership Committee is expecting that a high percentage of A.S.T.M. members will fill their quota of one new member each—and many have succeeded.

There are a number of ways of approaching a prospect. A personal chat is perhaps best—but not always feasible. Letters are effective—especially when they have a convincing tone, such as the following one, written by an active and long-time A.S.T.M. member:

DEAR MR. ———

I am enclosing an application form for membership in the American Society for Testing Materials.

You will notice that this form has already been signed by Mr. ———— and myself so that should you wish to make application to become a member, the form is already signed by two members. I am taking the liberty of doing this because I am thoroughly convinced that should you join this Society, and after you have seen the wonderful literature, issued in the form of specifications of all kinds and technical papers covering practically every material used in construction, you will forever thank me for having drawn your attention to this source of information.

This laboratory has held a membership in the Society since the inception of the latter, and I am not exaggerating when I say that we have derived more benefit from A.S.T.M. literature than from any other source.

The by-laws governing the membership of this Society are printed on the back of the application form, and you will observe that the fee is fifteen dollars ($15) a year. For that sum you will secure two volumes each year, containing from 1000 to 1500 pages each, and every three years volumes of standards are issued, one on metals and the other on non-metals. These standards cover hundreds of materials and I feel confident that you will be referring to them constantly in your work.

Yours very truly,

————————

Such a letter takes a short time to compose, but it may repay the effort manyfold and certainly is a very definite service to A.S.T.M.

An application blank is enclosed to each member. Use it.

Cost of Establishing Headquarters

At the Executive Committee meeting on April 10 the Secretary-Treasurer presented his final report on the establishment of the new headquarters. The total cost has come to just under $4000 ($3988.44 to be exact), all of which has been paid from the Headquarters Fund of $5000, set up as a reserve about five years ago. This important move has therefore been made without any drain on current income and there is still something over $1000 available for headquarters expenditures if required.

Of the total amount expended, about $430 covered items incident to actual expense of moving. The remainder, about $3560, represents cost of new furnishings and appears as an asset on the balance sheet of the Society.

Petroleum Congress Papers Printed

The many papers presented at the World Petroleum Congress, held in London last July, have been compiled in two bound volumes, Vol I including the Geological and Production Sections, and Vol. II covering Refining, Chemical, and Testing Sections. Each volume also includes the lectures given, report of the final sessions and the banquet addresses.

A.S.T.M. members will recall that this Congress was organized by the British Institution of Petroleum Technologists to provide a forum for discussing international cooperation in standardization and to present information, through papers, of recent advances which have been made in petroleum technology. Dr. R. P. Anderson, Secretary, Division of Refining, American Petroleum institute, and Secretary of A.S.T.M. Committee D-2 on Petroleum Products and Lubricants was the official A.S.T.M. delegate.

Some 240 papers were presented and each is included in the cloth-bound Proceedings of the Congress. Discussion of many of the papers is given. Volume I is on sale at £1 15*s*.; Vol. II, £2 5*s*. The papers are arranged in sections and special sectional volumes are also available.

All orders and inquiries should be addressed to the Joint Editors, World Petroleum Congress, Aldine House, Bedford Street, London, W. C. 2, England.

S.A.E. Representatives on Non-Ferrous Committees

Announcement was made in the January BULLETIN of the designation of certain members to represent four A.S.T.M. committees in the non-ferrous group on the Non-Ferrous Division of the Society of Automotive Engineers. The committees involved are B-2 on Non-Ferrous Metals and Alloys, B-5 on Copper and Copper Alloys, Cast and Wrought, B-6 on Die-Cast Metals and Alloys and B-7 on Light Metals and Alloys, Cast and Wrought. As the representatives of the S.A.E. Non-Ferrous Division on these A.S.T.M. committees, the following are announced: W. H. Bassett, Metallurgical Manager, The American Brass Co., Committees B-2 and B-5; D. L. Colwell, Sales Manager, Stewart Die Casting Corp., Committee B-6; P. V. Faragher, Metallurgist, Aluminum Company of America, Committee B-7.

Because the above-named A.S.T.M. committees and the S.A.E. Non-Ferrous Division are working on problems of mutual interest, it was deemed desirable to have direct representation of the respective groups, and the designation of representatives by the S.A.E. on these four A.S.T.M. committees also provides official representation of the automotive industry.

Correction in Symposium on Cast Iron

Attention is called to two changes which should be made in tables appearing in the Symposium on Cast Iron. In Fig. 30, appearing on page 187, Part II, 1933 *Proceedings*, the temperature of test, 700 F., should be added to the figure caption, which would then read "Fig. 30.—Time-Deformation Curves for Three Irons, 700 F." In Table XXVI, appearing on page 189, the heading over the last five columns should be corrected to read "Deformation, in. per inch per hour $\times 10^{-7}$." Similar corrections should be made in the reprint of the symposium.

New Members to April 20, 1934

The following 23 members were elected from March 24 to April 20, 1934:

Company Members (4)

DEUTSCHES KUPFER-INSTITUT E. V., H. Bröking, Manager, Linkstrasse 19, Berlin, W 9, Germany.

KRESS AND CO., S. H., E. F. Sibbert, Architect, 114 Fifth Ave., New York City.

MURRAY CORPORATION OF AMERICA, THE, A. Wallick, Chief Chemist, 1424 Aberle St., Detroit, Mich.

PHOENIX IRON CO., THE, M. E. Latshaw, Engineer of Tests, Phoenixville, Pa.

Individual and Other Members (16)

BARLOW, E. H., Chief Engineer, Standard Oil Development Co., Box 37, Elizabeth, N. J.

BERMAN, MICHAEL, Chief Chemist, Hewitt Rubber Corp., 240 Kensington Ave., Buffalo, N. Y.

FOOTE, W. L., Advertising Manager, B. F. Perkins and Son, Inc., Holyoke, Mass.

GOGAN, JOSEPH, President and Engineer, Gogan Machine Corp., 1440 E. Fifty-fifth St., Cleveland, Ohio.

HOGENTOGLER, C. A., Senior Highway Engineer, U. S. Bureau of Public Roads, 1927 Thirty-seventh St., N. W., Washington, D. C.

HOTCHKIN, J. ROWLAND, President and Treasurer, The Palnut Co., Irvington, N. J. For mail: 96 Haddon Place, Upper Montclair, N. J.

INSTITUTO DE TECNOLOGIA, Avenida Venezuela 82, Rio de Janeiro, Brazil.

KRUMBHAAR, WILHELM, Research Chemist, Beck, Koller and Co., Inc., 601 Woodward Heights Boulevard, Detroit, Mich.

MAACK, H. W., Chief Chemist and Metallurgist, Crane Co., 836 S. Michigan Ave., Chicago, Ill.

MADISON, J. O., Engineer of Cars and Shops, Board of Transportation, New York City. For mail: 348 Carlton Ave., Brooklyn, N. Y.

MARCEAU, E. T., Manager, Manufacturing Dept., and Director of Research, Two in One-Shinola-Bixby Corp., 88 Lexington Ave., New York City.

MASLAND, C. H., 2D, Technical Director and Vice-President, C. H. Masland and Sons, Carlisle, Pa.

SCHWENK, N. H., President, Cramp Brass and Iron Foundries Co., Paschall Station, Philadelphia, Pa.

WEBER, W. C., Chemical Engineer, Southern Mineral Products Corp., Piney River, Va.

WILCOXON, I. J., Secretary, Lyon, Conklin and Co., Inc., Race and McComas Sts., Baltimore, Md.

WRIGHT, F. L., Metallurgist, Norma Hoffmann Bearings Corp., Stamford, Conn.

Junior Members (3)

BEESON, J. K., Special Representative, Pittsburgh Steel Co., Pittsburgh, Pa. For mail: Schoolhouse Lane, Pittsburgh, Pa.

SELLERS, H. P., Chief Chemist, American Petroleum Co., Houston, Tex. For mail: 700 Seventh Ave., E., Houston, Tex.

ZIEVE, W. A., Textiles Manufacturer, 45 Bay, Twenty-third St., Brooklyn, N. Y.

Necrology

We announce with regret the death of the following:

ARTHUR C. FRANKLIN, Analyst, Hong Kong, China. Member since 1932.

W. S. LEE, Vice-President and Chief Engineer, Duke Power Co., Charlotte, N. C.

ROBERT M. WATSON, Consulting Civil Engineer and Surveyor, Wise & Watson, Rutherford, N. J. Member since 1927.

WALTER WOOD, Cast-Iron Pipe Manufacturer, Head, R. D. Wood and Co., Philadelphia, Pa. Mr. Wood, who died on April 20 in Washington, where he had gone on business, was 84 years old. He joined the firm of R. D. Wood and Company in 1868, after studying at Haverford College and Harvard. He was president and director of a number of other companies.

Mr. Wood took an active part in the early history of A.S.T.M. and the Society has benefited from his close interest and support. He became a member in 1900 and immediately became active in the work of the Committee on Steel on which he was represented until 1915. When the Committee on Cast Iron was formed in 1903, he was chosen chairman, serving until 1914, when he became vice-chairman. In 1926 he was made honorary vice-chairman. As a member of technical committees of the first International Association for Testing Materials, he aided in the advancement of this work.

PROVISIONAL PROGRAM

FOR

THIRTY-SEVENTH ANNUAL MEETING

ATLANTIC CITY — CHALFONTE-HADDON HALL — JUNE 25-29

Tuesday, June 26 — 2 P.M. — First Session

Reports of Administrative Committees; Nomenclature and Testing

Opening Remarks by the President. T. R. Lawson.

Minutes of the Thirty-sixth Annual Meeting.

Report of Committee E-6 on Papers and Publications. C. L. Warwick, Chairman.

A report of the committee's activities for the year.

Report of Committee E-9 on Research. H. F. Moore, Chairman.

A brief review of research activities and the work of the several research committees.

Report of Committee E-10 on Standards. Cloyd M. Chapman, Chairman.

Reports on specifications and methods of test submitted under the procedure for acceptance and publication of new and revised tentative standards and tentative revisions of existing standards in the interim between annual meetings of the Society. Reviews standardization projects considered during the year.

Annual Report of the Executive Committee. C. L. Warwick, Secretary-Treasurer.

A general report of Society activities with particular reference to membership, publications, finances and administrative matters relating to committee activities and inter-society relations.

Report of Committee E-8 on Nomenclature and Definitions. Cloyd M. Chapman, Chairman.

Reports progress in correlation of definitions of terms.

Report of Committee E-1 on Methods of Testing. W. H. Fulweiler, Chairman.

Presents revisions in tentative methods of verification of testing machines and proposed definitions of consistency and plasticity to be presented to the Society for publication as tentative.

Effect of Thickness on the Accuracy of Rockwell Hardness Tests on Thin Sheets. R. L. Kenyon, The American Rolling Mill Co.

Presents results of tests conducted on several series of specimens, uniform in all respects except thickness, to determine the effect of thickness on Rockwell hardness. The specimens were prepared by a special technique consisting of etching and polishing. Degree and depth of surface strain were determined by a glancing X-ray beam. Tests were made with different loads and the limiting thickness for accurate readings was determined on two types of surface—polished and etched.

The Characteristics of the Huggenberger Tensometer. R. W. Vose, Massachusetts Institute of Technology.

Outlines the precautions necessary in using the Huggenberger tensometer for refined work and indicates an accuracy of better than one per cent to be expected under these conditions. Points out that although the tensometer has a linear relationship throughout its range, it has marked but controllable variations in its "calibration factor" due to clamping pressure, hardness of the specimen, and position of the instrument.

The String Method of Measuring Deformations. N. Davidenkoff, Phys.-Mech. Institute.

Describes the many experiments, carried out by the author and his collaborators during 1926–1933 in U. S. S. R., on the string method of measuring deformation. Discusses the principles of the method, its theoretical and practical accuracy, the influence of temperature, various methods of determination of the tune of the string, and physical properties of a steel string.

Concerning the Effect of Notches and Laws of Similitude in Material Testing. A. Nadai and C. W. MacGregor, Westinghouse Electric and Manufacturing Co.

Analyzes the apparent size effects and other discrepancies which have been observed in recent experimental investigations on the effects of stress concentration produced by notches. Includes factors such as the speed of deformation, true geometrical similarity and the mechanical laws of similitude. Presents a few tests made with notched bars of steel and aluminum in which the influence of the speed of plastic deformations was investigated.

The Importance and the Determination of Particle Sizes of Hydraulic-Fill Dam Materials. H. H. Hatch, Cobble Mountain Reservoir, Springfield Water Works.

Discusses the importance of particle size determination in connection with the suitability of a material for a hydraulic-fill dam. Describes the electriator, used in an investigation conducted while constructing the Cobble Mountain Dam, for determining particle sizes smaller than No. 200 sieve. Also describes a rapid method for making such determinations by using a hydrometer.

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Tuesday, June 26 — 8 P.M. — Second Session

Thermometers, Naval Stores, Paints

Report of Committee D-15 on Thermometers and Laboratory Glassware. W. H. Fulweiler, Chairman.

Brief progress report reviewing committee activities. Recommends adoption as standard of tentative specifications for thermometers for Engler viscosimeters.

Report of Committee D-17 on Naval Stores. F. P. Veitch, Chairman.

Progress report presenting interesting discussion and information on crystallization of rosin and suggested methods of test.

Report of Committee D-1 on Preservative Coatings for Structural Materials. Allen Rogers, Chairman.

Presents as tentative, new specifications for titanium barium pigment, for titanium calcium pigment, for titanium dioxide, for zinc sulfide, for high zinc sulfide lithopone and for amyl acetate (from fusel oil); also methods of test for mass color and tinting strength of dry color pigments and extensive revision of existing method for tinting strength of white pigments. Submits tentative revisions of standard methods of routine analysis of dry red lead; of white linseed oil paints; of yellow and orange pigments containing chromium compounds, blue pigments and chrome green; also methods of sampling and testing shellac. Recommends adoption as standard, with revisions, of tentative specifications for shellac varnish and for centrifuged shellac varnish. Presents revisions of tentative specifications for petroleum spirits (mineral spirits), and methods of testing nitrocellulose clear lacquers and lacquer enamels. Recommends adoption as standard of tentative revision of standard specifications for basic carbonate white lead. Discusses activities of subcommittees on accelerated tests for protective coatings, on varnish, on paint thinners, etc.

Method and Apparatus for Determining the Interval Required to Disperse Oil Colors Throughout a Paint Medium. M. Rea Paul and George Diehlman, National Lead Co.

Describes an apparatus and method for comparatively determining the rate, in terms of time (seconds) at which colored pigments in oil can be dispersed throughout a white paint medium. A specially shaped (tubular) glass bottle is charged in specific quantities, lead shot, color in oil and white paint of defined consistency. After stoppering, this bottle is placed in a prescribed holder, set at an angle of 12 deg. from the vertical which is in turn connected to a rotating mechanism turning at 27 r.p.m. The endpoint is taken as that condition when by visual observation homogeneity or absence of streaking is obtained.

Provisional Program for Thirty-Seventh Annual Meeting

(Continued)

Discussion on Tinting Strength:

The several discussions of tinting strength of both white pigments and dry colors in the meetings of Subcommittee VIII on Methods of Analysis of Paint Materials of Committee D-1 on Preservative Coatings for Structural Materials have prompted the committee to sponsor a public discussion on this subject, for which the following papers have been secured:

The Tinting Strength of White Pigments. G. F. A. Stutz, New Jersey Zinc Co.

Reviews previous work on tinting strength and outlines the factors usually recognized as being important in the determination of this property. Discusses the type of grinding apparatus, degree of grinding, amount and type of tinting pigment and the resulting brightness, amount and type of vehicle and the resulting consistency, method of viewing to determine tint, and method of calculating tinting strength.

A Discussion of the Accuracy and Utility of Methods of Test for Mass Color and Tinting Strength of Dry Color Pigments. J. W. Ayers, C. K. Williams and Co.

Describes the many and diversified mass tone and tinting strength test methods used in the testing of dry colors, outlining the type of apparatus, grinding or dispersing the color, method of applying this energy, and the observation and interpretation of the results of the commonly used test methods. Discusses the merits and faults of these procedures from the point of view of the consumer and manufacturer of colors

Tinting Strength. R. H. Sawyer, Krebs Pigment and Color Corp.

Discusses the theoretical and practical aspects of tinting strength testing and the meaning and value of the tinting strength results, showing pitfalls in the present tinting strength test, the worth of tinting strength tests in general, and the limitations in using any tinting strength test as a measure of value of a white pigment.

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Wednesday, June 27 9.30 A.M. Third Session

Held Simultaneously with Fourth Session

Steel, Wrought Iron, Cast Iron

Report of Committee A-6 on Magnetic Properties. Thomas Spooner, Chairman.

Recommends adoption as standard of the tentative definitions of terms, with units and symbols, relating to magnetic testing.

Report of Committee A-9 on Ferro-Alloys. J. P. Gill, Chairman.

Presents new tentative methods of sampling molybdenum salts and compounds for metallurgical use. Recommends adoption as standard of tentative specifications for molybdenum, for ferrotungsten, for low-carbon ferromolybdenum, for molybdenum salts and compounds, and methods of chemical analysis of ferrotungsten and ferromolybdenum. Proposes withdrawal of standard specifications for tungsten powder.

Report of Committee A-1 on Steel. H. H. Morgan, Chairman.

Presents new tentative specifications for electric-fusion-welded steel pipe for high-temperature and high-pressure service. Recommends adoption as standard of tentative specifications covering bridge steel; building steel; mild steel plates; electric-resistance-welded steel pipe; forge-welded steel pipe; lock-bar steel pipe; and riveted steel and wrought-iron pipe. Submits revisions in specifications covering the following materials: concrete reinforcement bars; cold-rolled strip steel; structural steel for ships; carbon-steel car and tender axles; wheels for electric railway service; black and hot-dipped (galvanized) welded and seamless steel pipe; carbon-steel castings, alloy-steel bolting material, forged or rolled steel pipe flanges, and lap-welded and seamless steel pipe, the last four named being for high-temperature service.

Effect of Size and Shape of Test Specimen upon the Observed Physical Properties of Structural Steel. Inge Lyse and C. C. Keyser, Lehigh University.

Discusses results of tests made on 114 test specimens of circular and rectangular sections cut from low-carbon steel plates rolled from the same ingot. The results proved that for ordinary structural steel the size and shape of the test coupons are immaterial for the strength values, but very essential for ductility.

Testing Sheets for Blue Brittleness and Stability Against Changes Due to Aging. R. L. Kenyon and R. S. Burns, The American Rolling Mill Co.

Applies the principle that strain aging and blue brittleness of ferrous materials are but different manifestations of the same phenomenon and develops a relatively rapid method of evaluating the aging properties of such material by determining the tensile strength at room temperature and at a temperature in the blue-brittle range. Describes the apparatus used in determining tensile properties of sheet material at elevated temperatures (up to 600 F.). Correlates the difference between tensile strength at room temperature and at 400 F. with the change in tensile properties of cold-rolled sheets due to an artificial aging treatment.

Report of Joint Committee on Investigation of the Effect of Phosphorus and Sulfur in Steel. H. S. Rawdon, Acting Chairman.

Presents reports on effect of phosphorus on low-carbon steel and on effect of sulfur on forging steels with special reference to size of forging.

Report of Sectional Committee on Standardization of Dimensions and Material of Wrought-Iron and Wrought-Steel Pipe and Tubing. H. H. Morgan, Chairman.

Discusses changes to be made in the proposed American Tentative Standard for Wrought Iron and Wrought Steel Pipe. Announces approval as American Standard of eight A.S.T.M. specifications for steel and wrought-iron pipe.

Report of Committee A-2 on Wrought Iron. H. W. Faus, Chairman.

Presents report on quality standards for wrought iron. Recommends as tentative, revised specifications for wrought-iron plates. Presents tentative revisions in standard specifications for hollow rolled staybolt iron and recommends adoption as standard of tentative specifications for riveted steel and wrought-iron pipe.

Report of Committee A-3 on Cast Iron. Hyman Bornstein, Chairman.

Presents progress report of subcommittee on correlation of test bar and casting. Proposes revisions of tentative specifications for cast-iron culvert pipe.

Report of Sectional Committee on Specifications for Cast-Iron Pipe and Special Castings. T. H. Wiggin, Chairman.

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Wednesday, June 27 9.30 A.M. Fourth Session

Held Simultaneously with Third Session

Coal and Coke, Timber, Petroleum Products

Report of Committee D-5 on Coal and Coke. A. C. Fieldner, Chairman.

Presents interesting summary of subcommittee activities on methods of testing, on nomenclature and definitions, on pulverizing characteristics of coal, on coal friability, and on sampling coal at coal cleaning plants. Presents new method of test for agglutinating value of coal. Recommends adoption as standard of tentative revision of standard method of test for size of anthracite; and presents editorial revision in standard methods of laboratory sampling and analysis of coal and coke. Recommends adoption as standard of revised tentative definition of the term coke, and presents as information proposed definitions of gross calorific value and net calorific value.

Report of Sectional Committee on Classification of Coals. A. C. Fieldner, Chairman.

Interesting report presenting valuable summaries of activities of technical committees on scientific classification, on nomenclature, and on grade and use classification of coals. Culminating six years of fact finding and research on origin, properties and uses of coal, the committee developed and presents as tentative, specifications for classification of coals by rank (according to degree of progressive alteration in natural series from lignite to anthracite) and specifications for classification of coals by grade (according to calorific value, ash, sulfur content and ash-softening temperature).

Provisional Program for Thirty-Seventh Annual Meeting

(Continued)

Informal Report of Committee C-5 on Fire Tests of Materials and Construction. R. P. Miller, Chairman.

Reports progress on activities of subcommittee on fire tests of interior wall opening protectives (doors) in developing requirements for inclusion in the standard fire test specifications.

Report of Committee D-7 on Timber. Hermann von Schrenk, Chairman.

Presents new tentative specifications for creosote and 80 per cent creosote coal-tar solution for use in preservative treatment of timber. Proposes extensive revision of the tentative specifications for timber piles which will be applicable to all classes of work where timber piles are used. The revised specifications provide for classifying timber piles under three general divisions according to the use intended rather than by grade.

Measuring the Combustibility of Fire-Retardant Wood. E. F. Hartman, A. S. Williams and R. C. Bastress, Protexol Corp.

Discusses an investigation, involving nearly 2000 tests, which was undertaken for the purpose of developing satisfactory methods for use as check tests not involving the use of an expensive built-up assembly. While all of the generally used tests were investigated, only the following four gave results of sufficient promise to warrant detailed study: shavings, crib, timber and fire-tube. All tests were carried out in a fume hood with controlled ventilation and conditions were kept uniform throughout. Presents results which include data on resistance to ignition, resistance to flame penetration, tendency to support or communicate flame, loss in weight or strength, and tendency to smolder or glow. A comparison of similar properties of untreated wood is included.

Report of Committee D-2 on Petroleum Products and Lubricants. T. A. Boyd, Chairman.

Contains extensive report of technical committee on gasoline and reports on work of subcommittees on corrosion test for lubricating oils, on distillation, on flash point, and the technical committee on fuel oils (including Diesel fuels). Reports completion by special subcommittee of a revision and enlargement of the "Report on Significance of Tests of Petroleum Products." Recommends for immediate adoption, revisions of standard methods of test for distillation of crude petroleum and for sulfur in petroleum oils heavier than illuminating oil, also the enlargement of the standard abridged volume correction table for petroleum oils by the addition of two new groups, one for light and the other for heavy products. Recommends as tentative, revisions in standard methods of test for dilution of crank-case oils; for distillation of gasoline, naphtha, kerosine and similar petroleum products; for precipitation number of lubricating oils; and for water and sediment in petroleum products by means of centrifuge. Presents revisions of tentative methods of test for color of lubricating oils and for color of petrolatum by A.S.T.M. union colorimeter, for color of refined petroleum oil by Saybolt chromometer, and for sulfur in motor fuels, naphthas and illuminating oils (lamp method).

Discussion on Vapor Lock:

The subject of vapor lock has received consideration in Technical Committee A on Gasoline of Committee D-2 on Petroleum Products and Lubricants as referred to in the annual report of the committee. The present discussion is the outgrowth of these discussions and is introduced by the following two papers:

Motor Fuels and Vapor Lock. G. G. Brown, University of Michigan.

Motors and Fuel Vapor Pressure. T. A. Boyd, General Motors Corp.

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Wednesday, June 27 2 P.M. Fifth Session

Some Aspects of Specifying and Controlling Quality

The purpose of this session is to discuss certain aspects of the problems of specifying and controlling quality, particularly where quality can be measured only by sampling. Mr. Dodge's paper discusses certain sampling clauses that are sometimes incorporated in specifications to provide criteria for the acceptance or rejection of lots of material offered to a consumer. It is brought out that statistical control of quality of product from any source may be an important factor in determining how much consumer testing may be needed in a particular instance. In this connection, Mr. Chancellor's paper outlines some of the advantages, from the standpoint of both the consumer and the producer, o setting up a quality control program in a manufacturing plant. His illustrations are drawn largely from the metallurgical field. Both papers indicate ways in which statistical methods are being employed to advantage in these problems.

Acceptance-Rejection Requirements in Specifications. H. F. Dodge, Bell Telephone Laboratories, Inc.

Discusses the significance of certain simple criteria of acceptance and rejection that are often used in specifications. Refers particularly to quality characteristics for which it is feasible to make only a relatively small number of tests on a sampling basis. Discusses the relationship between number of tests and certain risks associated with sampling.

Application of Statistical Methods to the Solution of Metallurgical Problems in the Steel Plant. W. C. Chancellor, National Tube Co.

Emphasizes the desirability of considering plant metallurgical data on a statistical basis in efforts directed toward the production of uniform steel quality, since the "exact relationships" governing are complex in their resultant effects and, hence, produce variable rather than "exact" results. Discusses and illustrates the application of a comparatively recent theory to the detection of assignable causes of variation. Stresses the use of rational sub-groups of data rather than individual values, since the former can be more accurately treated by present theory. Discusses the construction and meaning of statistical control charts.

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Wednesday, June 27 4.30 P.M. Sixth Session

Edgar Marburg Lecture

The purpose of the Edgar Marburg Lecture is to have described at annual meetings of the Society, by leaders in their respective fields, outstanding developments in the promotion of knowledge of engineering materials. Established as a means of emphasizing the importance of promoting knowledge of materials, the Lecture honors and perpetuates the memory of Edgar Marburg, first secretary of the Society.

Ninth Edgar Marburg Lecture: "Water as an Engineering and Industrial Material," by Dr. Sheppard T. Powell (see page 3).

Reviews briefly the uses of water in engineering and industrial projects, drawing attention to the variety of specifications required to meet the varying demands for a satisfactory product. In this respect, discusses not only the specific requirements in different industries, but also certain recent advancements in the art of water purification to meet the critical requirements imposed upon the industry. The second portion of the lecture deals specifically with the problem of testing, more especially analytical procedure, to meet the exacting demands of present-day practice. Includes a brief survey of current research in this country and abroad drawing attention to the potential value of petrographic, spectrographic and other applications of analytical procedure.

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Wednesday, June 27 8.30 P.M. Seventh Session

Presidential Address, Award of Dudley Medal

Annual Address by the President. T. R. Lawson.

Award of Charles B. Dudley Medal to R. L. Templin.

The Eighth Award of the Charles B. Dudley Medal will be made to R. L. Templin, Chief Engineer of Tests, Aluminum Company of America, for his paper on "The Fatigue Properties of Light Metals and Alloys," which was presented before the Society at the 1933 annual meeting.

Introduction of New Officers.

The terms of the new officers, under the provision of the By-laws, begin at the close of the annual meeting.

Reception to New Officers and Members of Executive Committee.

Opportunity will be afforded the members of the Society to meet the newly elected officers.

To be followed by
Informal Dance and Smoker

Provisional Program for Thirty-Seventh Annual Meeting

(Continued)

Thursday, June 28 9.30 A.M. Eighth Session

Held Simultaneously with Ninth Session

Effect of Temperature on Metals, Fatigue of Metals

Report of Joint Research Committee of A.S.M.E. and A.S.T.M. on Effect of Temperature on the Properties of Metals. H. J. French, Chairman.

A brief review of committee activities. Presents revisions of tentative methods of test for short-time high-temperature tension tests of metallic materials and for long-time (creep) high-temperature tension tests of metallic materials.

The Interpretation of Creep Tests. P. G. McVetty, Westinghouse Electric and Manufacturing Co.

Discusses the requirements and limitations of creep tests with particular reference to the validity of extrapolation. Compares various methods of interpretation, and shows the use of creep-rate only to be unsatisfactory. Emphasizes the importance of structural stability in service. Suggests method whereby a few creep tests may be used to compare materials.

Creep Properties of 5 per cent Chromium and ½ per cent Molybdenum Steel Still Tubes. H. C. Cross, Battelle Memorial Institute, and E. R. Johnson, Republic Steel Corp.

Describes the creep properties of 5 per cent chromium and ½ per cent molybdenum steel still tubes, on specimens taken from actual tubes. Short-time tension tests at the same test temperatures are included. Discusses the effects of variations in grain size, carbon content, and in directions of taking specimens (longitudinal and transverse).

Aging Embrittlement of 4 to 6 per cent Chromium Steel. H. M. Wilten and E. S. Dixon, The Texas Company.

Presents experimental data on temper brittleness including general embrittlement of not only 4 to 6 per cent chromium steel but also effect of additions of molybdenum and tungsten to that steel. Discusses failure of preheater tube representing typical normal failure due to overheating accompanied by swelling, creep, etc.; also failure of the tubing when cold, showing low impact value, internal stress, etc.

Report of Research Committee on Fatigue of Metals. H. F. Moore, Chairman.

Report on cooperative work on relation of atomic structure to fatigue strength. Discusses study of "probable damage line" with *S-N* diagram and consideration being given to preparation of recommended practice for certain fatigue tests.

A High-Speed Fatigue Testing Machine and Some Tests of Speed Effect on Endurance Limit. G. N. Krouse, University of Illinois.

Describes a high-speed fatigue testing machine driven by an air turbine, operating over a range of speeds from 5000 to 30,000 r.p.m., using an inexpensive rotating-cantilever beam specimen. Presents results of the tests at several different speeds on four steels, two cast irons, brass and duralumin. Submits suggestions whereby the time and costs of determining the endurance limit of a material may be reduced by increasing the testing machine speed and by use of simpler specimens.

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Thursday, June 28 9.30 A.M. Ninth Session

Held Simultaneously with Eighth Session

Waterproofing and Road Materials

Report of Committee D-8 on Bituminous Waterproofing and Roofing Materials. J. M. Weiss, Chairman.

Recommends adoption as standard of tentative method of analysis of roofing felt for fiber composition. Presents proposed revised specifications for asphalt roofing surfaced with powdered talc or mica, for asphalt shingles surfaced with coarse mineral aggregates, for asphalt roofing surfaced with fine mineral aggregates, and for asphalt roofing surfaced with coarse mineral aggregates which are being considered for publication as tentative. A report on bituminous emulsions intended for waterproofing includes proposed methods for such materials including tests for miscibility with water, determination of water, application stability and freezing test.

Bituminous Joint Compounds for Sewer Pipe. J. S. Crandell, University of Illinois.

Presents results of an investigation carried on during the past five years at the University of Illinois Experiment Station, of sewer pipe compounds, which includes pressure tests run on all of the materials, exposure of the bituminous compounds to the possible solvent action of oils and gasoline, and to raw sewage, the determination of flexibility of the bituminous materials under different climatic conditions, and the rate of settlement of mineral fillers. Several new mineral fillers have been experimented with.

Indentation of Asphalt Tile. J. W. McBurney, U. S. Bureau of Standards.

Discusses the relation between time and depth of indentation where the indenting tool is a ball and a load acts through a ball on a material subject to indentation. Describes portable apparatus for making such a test and presents a formula for relating time and indentation and predicting indentation at long times based on short-time tests.

Report of Committee D-4 on Road and Paving Materials. H. F. Clemmer, Chairman.

Recommends adoption as standard of tentative specifications for calcium chloride and methods of chemical analysis of calcium chloride. Reports results of cooperative distillation tests on methods for separation of the base and flux of asphaltic cutback products and presents proposed method of test for distillation of liquid asphaltic products. Presents five proposed specifications for emulsified asphalts, namely, for coarse graded aggregate mixes, for retread and coarse aggregate mixes, for heavy premix—winter grade, for heavy premix—summer grade, and emulsified asphalt (quick setting) for penetration and surface treatment; also completely revised methods of testing emulsified asphalts for roads, which are under consideration for publication as tentative.

Subgrade Soil Testing Methods. C. A. Hogentogler and E. A. Willis, U. S. Bureau of Public Roads.

Illustrates how the soil tests may serve to determine the suitability of soil or soil material for some particular use, such as binders in sand-clay and gravel roads, filler in bituminous road surfacing, or soil for mud jack operation; to distinguish between good and undesirable varieties of individual groups of surfacing material, such as limerock, caliche, shale, etc.; and to identify the properties of materials such as rock powder, diatomaceous earth, bentonite, etc., which, as admixtures, may assist in the stabilization of both subgrades and soil road surfaces.

A Laboratory Service Test for Pavement Materials. A. T. Goldbeck, J. E. Gray and L. L. Ludlow, Jr., National Crushed Stone Assn., Inc.

Describes the circular testing track constructed by the National Crushed Stone Assn. and the methods used for studying the service characteristics of aggregates and of bituminous pavement mixtures. Presents results of studies on gradation of aggregate, stone screenings as a blanket layer, mixed-in-place surfaces, resistance of stone to roller action, stability and durability of cold lay bituminous mixtures.

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Thursday, June 28 Afternoon Open

Committee Meetings and Recreation

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Thursday, June 28 8 P.M. Tenth Session

Held Simultaneously with Eleventh Session

Corrosion

Report of Committee A-10 on Iron-Chromium, Iron-Chromium-Nickel and Related Alloys. Jerome Strauss, Chairman.

Presents proposed tentative specifications for austenitic 18 per cent chromium, 8 per cent nickel alloy for applications in welding construction at ordinary temperatures for severe corrosive conditions. Contains report on polishing and etching of iron-chromium and iron-chromium-nickel steels for their metallographic examination. Reports progress on assembling of data covering chemical, physical, mechanical and fabricating properties important in connection with the manufacture and application of alloys within the committee's jurisdiction.

Provisional Program for Thirty-Seventh Annual Meeting

(Continued)

Report of Committee A-5 on Corrosion of Iron and Steel. H. E. Smith, Acting Chairman.

Presents interesting summary of activities of subcommittees including results of inspections of the atmospheric tests at Annapolis and the total immersion tests. Includes data on inspections of galvanized sheets after 7 years exposure. Reports progress of tests on metallic-coated hardware, structural goods, tubular goods; and the tests on electrodeposited coatings. Discusses proposed field test program on zinc-coated wire. Reports progress of work on specifications for metallic-coated wire products, on methods of testing, and on embrittlement investigation.

The Use of Bureau of Standards Soil Corrosion Data in the Design and Protection of Pipe Lines. K. H. Logan, U. S. Bureau of Standards.

Discusses the Bureau of Standards soil corrosion data which demonstrate the existence of serious corrosion underground on pipe lines in the absence of stray electric currents. Discusses further the application of these data to field problems and presents suggestions for economically reducing soil corrosion.

Observations on Effect of Surface Finish on the Initial Corrosion of Steel Under Water. L. J. Waldron and E. C. Groesbeck, U. S. Bureau of Standards.

Discusses the effect of an initial oxide surface film on specimens intended for under-water corrosion tests. Compares data in which one set of specimens was tested immediately after being cleaned by pickling and another set was allowed sufficient opportunity to acquire an oxide film after pickling and before test. Discusses the effects of variations in surface finish and of duration of immersion in water flowing at low and high velocities of specimens with and without an oxide film.

Report of Committee B-3 on Corrosion of Non-Ferrous Metals and Alloys. T. S. Fuller, Chairman.

Extensive report on outdoor exposure tests at nine locations of galvanic couples of the metals in common use and complete immersion couple tests of certain metals and alloys in hot water, brine, alkali and acid showing results after one year of exposure. Reports status of other corrosion tests in the field, including the atmospheric corrosion studies and the liquid corrosion test program on 24 non-ferrous metals and alloys.

The Determination of Traces of Dissolved Oxygen by the Winkler Method. M. C. Schwartz and W. B. Gurney, Louisiana Steam Generating Corp.

Outlines a procedure which largely avoids the uncertainties which have been associated with the Winkler method for determination of dissolved oxygen. Discusses the sensitivity of the indicator solution, the presence of impurities in the reagents and in the sample being tested, the presence of dissolved oxygen in the reagents, and the actual value of the "zero" practically to be indicated as such by the method.

Report of Committee D-19 on Water for Industrial Uses. Max Hecht, Chairman.

A brief progress report discussing the activities of the subcommittees in assembling data and surveying the available methods of sampling and methods of testing industrial waters.

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Thursday, June 28 8 P.M. Eleventh Session

Held Simultaneously with Tenth Session

Rubber, Textiles, Electrical Insulating Materials

Report of Committee D-11 on Rubber Products. H. A. Depew, Chairman.

Presents new tentative methods for measurement of abrasion resistance of rubber, and method of test for compression set of rubber used for vibration absorption. Submits as information proposed specifications for rubber blankets for use around electrical apparatus. Recommends adoption as standard of tentative specifications for rubber pump valves, for cotton rubber-lined fire hose, and tentative method of test for hardness of rubber. Recommends revision of tentative specifications for friction tape for general use for electrical purposes, and for rubber insulating tape.

The Testing of Rubber and Rubber-Like Material for Oil Resistance. O. M. Hayden, E. I. du Pont de Nemours and Co., Inc.

Reviews the existing methods for testing the oil resistance of rubber and rubber-like compositions and discusses their shortcomings from the angle of evaluating their performance under actual service conditions. Emphasizes the fact that the most valuable test results are not capable of numerical expression but are dependent on manual tests and personal observations.

Materials to be Developed for Structural Engineering Models. A. V. Karpov, Aluminum Company of America.

Discusses the present tendencies toward increased use of engineering models in solving structural problems; specifications for materials for such models derived from the similarity conditions; materials presently available; work done in developing the rubber litharge compound used in the models of Calderwood and Boulder dams; and suggested research in rubber compounds.

The Testing of Raw Materials for Rubber Compounding. B. S. Taylor, The B. F. Goodrich Co.

Describes the properties sought and the standard tests used for the most important raw materials for use in rubber manufacture and the critical points to be considered in evaluating a raw material for rubber, which are: Ease of incorporation into rubber batches, effect on rate of vulcanization and aging, ability to reinforce or soften rubber compounds, effect in imparting special physical properties, and properties involving human factors—color, odor, toxicity, consistency. Describes a number of important impurities and explains their undesirability.

Report of Committee D-13 on Textile Materials. H. J. Ball, Chairman.

Presents interesting summary of activities of subcommittees on cotton, rayon, wool, felt, asbestos textiles, methods and machines, nomenclature, and bleaching, dyeing and finishing. Recommends adoption as standard of tentative specifications for 0.007-in. cotton cloth, and test for determining relative humidity; also the addition of test methods to specifications for hose ducks and belt ducks. Proposes adoption as standard of improved test for shrinkage in laundering of woven cotton cloth and its inclusion in the general textile test methods and in the specifications and tests for cotton fabrics. Presents revised plucking test in tentative specifications for holland cloth and revised definition for direction of twist. Reports specifications being completed for woolen yarns and development of revisions in tentative methods of testing grease wool and allied fibers for scoured content and in specifications for tolerances and test methods for rayon.

Report of Committee D-9 on Electrical Insulating Materials. H. L. Curtis, Chairman.

Presents interesting summary of subcommittee activities on insulating varnishes, paints and lacquers; on molded materials; on plates, tubes and rods; on insulating mineral oils; on solid filling and treating compounds; on electrical tests and on insulating papers and fabrics. Submits new tentative methods of testing molding powders used in manufacturing electrical insulators. Recommends tentative revision of standard methods of testing molded materials and adoption of revision in standard methods of testing electrical porcelain. Presents method of measuring power factor and dielectric constant at commercial frequencies. Recommends methods for measuring coefficient of expansion and for power factor and dielectric constant of solid treating and filling compounds. Presents test for folding endurance of untreated insulating paper. Recommends revisions in tentative methods of testing varnishes, laminated sheet materials, varnished cloth and tape, laminated tubes; and specifications for black bias-cut varnished cloth tape. Proposes revisions of the tentative methods of testing sheet and tape materials for dielectric strength. The tentative test for thickness using machinist's type micrometer has been enlarged to apply to solid electrical insulation in general.

Effect of Moisture Content of Specimens on Results of Compressibility Test for Molded Sheet Materials. W. A. Evans, Bell Telephone Laboratories, Inc.

Discusses the loosening of molded sheet insulating materials due in part to deformation under pressure and, with most materials to changing dimensions with changes in moisture content. The relative changes due to moisture content are usually greater than those due to deformation under load. Points out the difficulty of obtaining reproducible results in tests of materials whose specimens have not been brought to some standard moisture condition.

Provisional Program for Thirty-Seventh Annual Meeting

(Continued)

Methods of Measurement of Dielectric Characteristics at Commercial Frequencies. P. H. Dike, Leeds & Northrup Co., W. B. Kouwenhoven, Johns Hopkins University, and J. B. McCurley, Johns Hopkins University.

Describes two bridges that have been proposed for the measurement of the characteristics of dielectrics at commercial frequencies. One is a shielded transformer bridge designed for use in ordinary testing where a rapid and simple method of test is desirable and where the highest degree of accuracy is not essential. The other is a modified Schering bridge, completely shielded, and with a low impedance arrangement for establishing the desired potential difference between shield and low potential end of bridge. It is intended for use in cases such as measurements on insulating oils, where a high degree of accuracy is demanded. Discusses the methods of operation of these bridges and presents examples of measurements made with them.

A Comparison of the Methods for Testing Insulating Materials for Power Factor and Dielectric Constant at 1000 Cycles. W. B. Kouwenhoven, Johns Hopkins University, and L. W. Marks, General Electric Co.

Discusses the series resistance and the parallel resistance bridges which have been proposed as A.S.T.M. methods for the measurement of dielectric characteristics at 1000 cycles, and the possibility of using the balanced Schering bridge for the same purpose. These methods were studied both from the theoretical and practical viewpoints. Compares results of measurements made upon a number of samples by all three methods. Recommends the use of the substitution method and a Wagner grounded bridge.

Informal Report of Sectional Committee on Electrical Insulating Materials. H. L. Curtis, Chairman.

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Friday, June 29 9.30 A.M. Twelfth Session

Held Simultaneously with Thirteenth Session

Non-Ferrous Metals, Metallography

Report of Committee B-1 on Copper Wire. J. A. Capp, Chairman.

Report of Committee B-2 on Non-Ferrous Metals and Alloys. William Campbell, Chairman.

Some Factors Affecting Strain Measurements in Tests of Metals. R. L. Templin, Aluminum Company of America.

Discusses factors affecting strain measurements based on results of a large number of tests carried out on metals for the purpose of affording a comparison of deformations on various elements of both tension and compression specimens of various forms in both the elastic and plastic ranges. Determines the effects of eccentric and oblique loadings on the specimens; the effects of different types of testing machine jaws on the deformations obtained and the effects of different types of plugs in the case of the hollow round tension specimens. In the case of the compression specimens, particular care has been used to eliminate alignment and machining errors.

Report of Committee B-6 on Die-Cast Metals and Alloys. H. A. Anderson, Chairman.

Presents new tentative specifications for magnesium-base die-casting alloys. Includes photographic inspections of exposed specimens in the outdoor corrosion tests. Discusses activities of subcommittees on aluminum-base and zinc-base die-casting alloys. *Paper appended:* "The Effect of Variations in Aluminum Content on the Strength and Permanence of the A.S.T.M. XXIII Zinc Die-Casting Alloy," by E. A. Anderson and G. L. Werley.

The Impact Strength of Commercial Zinc Die Castings. E. A. Anderson and G. L. Werley, The New Jersey Zinc Co.

Presents results of tests made on Charpy impact specimens from over fifty commercial zinc die castings. Three specimens were machined from each casting at locations selected to include the greatest possible variation in cross-section. The results are classified to show the range of impact strength found in several types of cross-section and compared with the impact strength measured on die-cast test specimens of the A.S.T.M. type. These results controvert the somewhat common belief that the impact properties obtained with test bars cast under controlled conditions are not necessarily duplicated in commercial castings.

Report of Committee B-7 on Light Metals and Alloys, Cast and Wrought. J. B. Johnson, Chairman.

Extensive report on the physical properties, service characteristics, corrosion-resistant properties, etc., of the several metals and alloys coming under the class of light metals, developed in cooperation with American Foundrymen's Association. Submits new tentative specifications for magnesium-base alloy ingot for remelting. Proposes revisions of tentative specifications for aluminum sheet and plate, for aluminum-manganese alloy sheet and plate, for magnesium-base alloy castings, for magnesium-base alloy sheet and for magnesium-base alloy wrought shapes (other than sheet).

Report of Committee B-4 on Electrical-Heating, Electrical-Resistance and Electric-Furnace Alloys. Dean Harvey, Chairman.

Presents interesting summary of subcommittee activities on mechanical, electrical and life tests and on thermostatic metals. Presents new tentative method of test for linear expansion of metals and methods for determination of aluminum and titanium in chemical analysis of metallic materials for electrical heating. Recommends adoption as standard of two tentative specifications covering drawn or rolled alloys for electrical heating elements; also method of test for the temperature-resistance constants of resistance alloys.

Report of Committee E-4 on Metallography. C. H. Davis, Chairman.

Reports progress on preparation of revised methods of metallographic testing of ferrous and non-ferrous metals; and lists additional proposed magnifications under consideration for inclusion in recommended practice for metallographic photography.

Note on Frictional Resistance of Steel and Brass in Shrink Fits. W. H. Swanger, U. S. Bureau of Standards.

Discusses shrink fits consisting of a ring and shaft of three combinations of metals as follows: (a) both components of steel, (b) both components of brass, (c) a ring of brass and a steel shaft. Presents data on the difference in the frictional characteristics and the tendency to score or to "seize and gall" which were studied as the assembled "fit" was separated under tension.

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Friday, June 29 9.30 A.M. Thirteenth Session

Held Simultaneously with Twelfth Session

Ceramics, Refractories, Masonry Materials

Report of Committee C-3 on Brick. H. T. Shelley, Chairman.

Recommends adoption as standard of the tentative specifications for concrete building brick. Reports consideration being given to definition of brick, to modifications in tests for compression and transverse strength of brick, and to inclusion of weather resistance requirements in clay building brick specifications.

Permeability Tests of 8-in. Brick Wallettes. L. A. Palmer and D. A. Parsons, U. S. Bureau of Standards.

Discusses the properties of bricks and mortar as related to the rate of water transmission through 240 test walls comprised of 5 different makes of brick and 10 different mortar compositions. These tests were carefully standardized and the data are of a quantitative nature and indicate definite means of improving brick masonry from the standpoint of water tightness.

Tests on Reinforced Brick Masonry Columns. M. O. Withey, University of Wisconsin.

Presents results of compression tests on thirty-two 12 by 12-in. reinforced brick masonry columns 6 or 12 ft. in length, including in the variables two very different types of brick, two mortar mixes, three percentages of longitudinal steel, and three percentages of lateral reinforcement. Some data on the effects of several repetitions of load and of time of loading are given. Results show that strength of a reinforced brick masonry column is directly dependent upon the strength of the plain masonry and the strength at yield point of the longitudinal steel, and to a lesser degree upon the percentage of lateral reinforcement.

Provisional Program for Thirty-Seventh Annual Meeting

(Continued)

Resultant Separation Cracking Between Various Mortars and Brick in Existing Brick Structures. C. C. Connor, New Jersey Bell Telephone Co.

Presents results of linear measurements of separation cracks between the brick and mortar in about 40 brick buildings. A percentage of separation cracks was obtained by measuring the cracks in various panels of brickwork at each building. Each panel contained the same linear footage of horizontal and vertical mortar joints and was selected so as to give a fair comparison.

Report of Committee C-8 on Refractories. R. A. Heindl, Chairman.

Presents new tentative specifications for refractories used in incinerators and for ground fire clay. Recommends as tentative, new methods of chemical analysis of magnesite refractories, a general panel test for spalling and also a revised spalling test for boiler furnace brick. Proposes definitions for silica cement and for ground fire clay and recommends symbols for heat transmission of refractories. Presents revisions in tentative method of test for high-temperature heat insulation and recommends adoption as standard of tentative method of test for particle size of ground refractory materials.

The Effect of De-Airing Stiff-Mud and Dry-Press Bodies for Clay Products Manufacture. W. C. Rueckel, Ohio State University, and R. B. Keplinger, Metropolitan Paving Brick Co.

Presents a summary of the laboratory development and findings on de-airing of clay products and data relative to the improvement in properties of clay products obtained in commercial operation. Describes the laboratory tests, placing particular emphasis on the improvement in fired properties (porosity, absorption, transverse, and crushing strength, and modulus of elasticity).

Report of Committee C-4 on Clay Pipe. G. T. Hammond, Chairman.

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Friday, June 29 — 2 P.M. — Fourteenth Session

Cement, Lime, Gypsum

Report of Committee C-11 on Gypsum. J. W. Ginder, Chairman.

Recommends adoption as standard of tentative specifications for gypsum wall board, for gypsum lath and for gypsum sheathing board.

Report of Committee C-7 on Lime. J. R. Withrow, Chairman.

Discusses needed research on lime and summarizes activities of subcommittees on structural and chemical lime, on hydraulic lime and on methods of tests. Presents new tentative specifications for eminently hydraulic lime for structural purposes. Proposes revision of specifications for quicklime, to include all types of quicklime, and hydrated lime for structural purposes. Proposes elimination of test procedures from specifications for quicklime and hydraulic lime and the incorporation of the physical tests, including the autoclave method of test for soundness, in the general standard methods. Recommends adoption as standard of tentative specifications for sand for use in lime plaster.

Report of Sectional Committee on Specifications for Plastering. F. Leo Smith, Acting Chairman.

Report of Committee C-1 on Cement. P. H. Bates, Chairman.

Contains pertinent discussion of suggested modifications of the standard portland cement proposed in response to demands for various types of hydraulic cements, such as the low heat of hardening, and sulfate-resisting cements, for different types of construction. Report on cooperative series of sub-sieve fineness tests presents interesting data on particle size and specific surface of number of cements. Presents valuable report of plastic mortar tests on twelve cements by ten laboratories and recommends new tentative method of test for compressive strength of portland-cement mortars.

Study of Cement Composition in Relation to Strength, Volume Change, Resistance to Sulfate Waters, and to Freezing and Thawing of Mortars and Concrete. H. F. Gonnerman, Portland Cement Assn.

Presents data on more than 130 cement compositions in relation to strength, volume change, resistance to sulfate waters and to freezing and thawing, of mortars and concretes. This paper is the outgrowth of 3 years' study based on laboratory-prepared portland cements covering a wide range of controlled compositions.

The Suspension Turbidimeter for Determination of Specific Surface of Granular Materials. Alexander Klein, University of California.

Discusses the rapid determination of specific surface of cement and other granular materials by a turbidimeter. Describes the apparatus and presents the principles and equations involved, together with the assumptions made in developing such equations. There is also included a statement of the procedure used together with results obtained with various portland cements as compared with results obtained on samples of the same materials with apparatus employing sedimentation principles.

The Vane Calorimeter. R. W. Carlson, University of California.

Describes a type of calorimeter which can be used for measuring heat of hydration of neat cement pastes while curing at substantially constant temperatures. This calorimeter has certain advantages over other types of calorimeters, chief among which are its low cost and its suitability for cements which are not readily soluble in acids. Presents typical data for a number of cements. Compares results from this calorimeter with those from the heat-of-solution calorimeter to indicate the approximate accuracy.

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Friday, June 29 — 8 P.M. — Fifteenth Session

Concrete

Report of Committee C-9 on Concrete and Concrete Aggregates. R. W. Crum, Chairman.

Presents new tentative specifications for sodium silicate for curing concrete and method of test for determination of coal and lignite in sand. Recommends adoption as standard of five existing tentative specifications for curing portland-cement concrete slabs. Contains abstract of unpublished paper by C. L. Ford on "Comparison of Standards for Colorimetric Test for Sand."

Paper appended: "A Study of the Permeability of a Few Integrally Waterproofed Concretes" by W. M. Dunagan and G. C. Ernst.

Effect of Duration of Moist Curing on the Principal Properties of Concrete. A. G. Timms, Portland Cement Assn.

Presents the results of freezing-and-thawing, volume change, strength, permeability tests, and absorption of specimens cured various periods in the moist room before test. The study includes normal portland and high-early-strength cements, each cement being used with three different mixes.

Plastic Flow of Concrete Under Sustained Loads. R. E. Davis, H. E. Davis and J. S. Hamilton, University of California.

Describes results of laboratory tests made to determine the effect of plastic flow and shrinkage on the stresses in reinforced-concrete columns, the plastic flow of concrete subjected to bi-axial and tri-axial loading, and the effect of size of test specimen and temperature of storage upon flow. Presents additional data upon tests previously reported, in which some of the specimens have been loaded continuously over a period of about 7 years, showing the influence upon flow of: intensity of sustained stress, moisture conditions, age at time of application of load, kind of aggregate, richness of mix and presence of reinforcing steel.

Proposed Method of Making Compression Tests on Portions of Concrete Beams from Flexure Tests. L. H. Koenitzer, Kansas State College of Agriculture and Applied Science.

Discusses a proposed method for making compression tests on portions of the specimens that were used for flexure tests. The method gives practically the same results as the standard 6×12-in. cylinders and as satisfactory results as prepared prisms commonly used on jobs where flexure specimens are tested. Presents the results of several hundred tests made on 6×12-in. cylinders, $6 \times 6 \times 12$-in. prisms, and 6-in. modified cubes for various paving mixes. By this method any laboratory having a 300,000-lb. compression machine available can make compression tests on previously broken flexure specimens.

Report of Committee C-13 on Concrete Pipe. A. E. Phillips, Chairman.

Presents revisions of the standard specifications for non-reinforced concrete sewer pipe providing changes in details of test methods and elimination of requirements for all pipe sizes over 24-in. internal diameter, the larger sizes to be covered in the reinforced-concrete sewer pipe schedule. Recommends revisions of the tentative specifications for reinforced-concrete pipe involving changes in test specimens and test procedure, and material increases in the strength requirements for all sizes of pipe.